PATENT COOPERATION T ATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D.C.20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 04 November 1999 (04.11.99)	
International application No. PCT/AU99/00264	**Applicant's or agent's file reference** 578823
International filing date (day/month/year) 09 April 1999 (09.04.99)	**Priority date** (day/month/year) 09 April 1998 (09.04.98)
Applicant KROIE, Robert	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

04 October 1999 (04.10.99)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer S. Mafla
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

Form PCT/IB/331 (July 1992)

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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 28 JUL 2000
WIPO PCT

Applicant's or agent's file reference 578823	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. **PCT/AU99/00264**	International filing date *(day/month/year)* 9 April 1999	Priority Date *(day/month/year)* 9 April 1998
International Patent Classification (IPC) or national classification and IPC **Int. Cl.** [7] E04C 2/08, E04F 13/02, B32B 15/12, E04B 2/72		
Applicant UNIPANEL PTY LTD et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   [X] This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of **10** sheet(s).

3. This report contains indications relating to the following items:

I	[X]	Basis of the report
II	[ ]	Priority
III	[X]	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	[X]	Lack of unity of invention
V	[X]	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	[ ]	Certain documents cited
VII	[X]	Certain defects in the international application
VIII	[ ]	Certain observations on the international application

Date of submission of the demand	Date of completion of the report
4 October 1999	18 July 2000
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer **SWAYAM CHINTAMANI** Telephone No. (02) 6283 2202

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU99/00264

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed.

☒ the description, pages **3-5, 7-17,** as originally filed,
pages , filed with the demand,
pages **1, 2a** received on **11 February 2000** with the letter of **11 February 2000**
pages **2, 6, 6a** received on **14 April 2000** with the letter of **13 February 2000**

☒ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages **21** received on **11 February 2000** with the letter of **11 February 2000**
pages **18-20, 22** received on **14 April 2000** with the letter of **13 February 2000**

☒ the drawings, pages **1/9 - 9/9,** as originally filed,
pages , filed with the demand,
pages , received on with the letter of

☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, was on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages

☐ the claims, Nos.

☐ the drawings, sheets/fig.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be nonobvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos: **34-36**

because:

☒ the said international application, or the said claims Nos. **34-36** relate to the following subject matter which does not require an international preliminary examination *(specify)*:

Claims 34-36 do not comply with Rule 6.2(a) because the claims should not rely on references to the description or the drawings.

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claim Nos. **34-36**

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- [ ] restricted the claims.
- [X] paid additional fees.
- [ ] paid additional fees under protest.
- [ ] neither restricted nor paid additional fees.

2. [ ] This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- [ ] complied with.
- [X] not complied with for the following reasons:

The first special technical feature is defined in claims 1-18 which recite a building panel of a metal substrate with a paper covering bonded thereto and a composite panel of spaced, covered metal substrates with a core between the substrates.

The second special technical feature is recited in claims 19-33 wherein a building system with spaced sheets, or core between said sheets and a reinforcing element within the core and between the spaced sheets is defined.

Since the above mentioned groups of claims do not share any of the technical features identified, a "technical relationship" between the inventions, as defined in PCT rule 13.2 does not exist. Accordingly the international application does not relate to one invention or to a single inventive concept, a priori.

Additional search fees were paid by the applicant during the International Search.

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- [X] all parts.
- [ ] the parts relating to claims Nos.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	**1-12, 14-33**	**YES**
	Claims	**13**	**NO**
Inventive step (IS)	Claims	**1-12, 14-33**	**YES**
	Claims	**13**	**NO**
Industrial applicability (IA)	Claims	**1-33**	**YES**
	Claims		**NO**

2. Citations and explanations (Rule 70.7)

The following documents are referred to

D1 GB 391936 (HH ROBERTSON CO)
D2 US 2850999 (KAPLAN et al)
D3 JP 75001912 (DAIDO STEEL SHEET MFG CO)
D4 GB 1482111 (SUMITOMO METAL INDUSTRIES LTD and IGETAL STEEL SHEET CO. LTD)
D5 JP 02151440 (FUJI KOBUNSHI KK)
D6 FR 1133582 (MAZZOLI)
D7 AU 41506/78 (RUCKZIEGEL)
D8 US 3667180 (TISCHUCK)
D9 DE 2449917 (ACIEROID ITALIANA S.P.A.)
D10 US 4316351 (TING)
D11 DE 647272 (MAUSER KOMM-GES)
D12 DE 2611893 (ELDA AG, GLARUS)
D13 EP 250258 (SEVEN STRUCTURES, INC.)
D14 WO 93/12303 (JAMES HARDIE & COY PTY LTD)
D15 FR 2694774 (VIG NOLLES)

Novelty (N)

Claims 1-12 and 14-18 meet the criteria set forth in PCT Article 33(2)-(4) for novelty. The prior art published before the priority date does not disclose a building panel including a metal substrate and a paper covering wherein the metal sheet includes edge regions shaped to form interfitting connecting elements.

Claim 13 is not novel when compared to documents D1 to D5. Each of these citations discloses a 'paper' bonded to metallic substrate by means of an adhesive. For example, D5 discloses a board used for making doors, walls and floors, is made by bonding paper to a substrate that includes steel board. The adhesives used include diallyl pthalate resin, polyester resin and urea/vinyl acetate resin. A skilled addressee would consider these as hot melt adhesives. Therefore, claim 13 is not considered novel.

Continued on supplemental box

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

1. Claims 34-36 do not comply with Rule 6.2(a) because the claims should not rely on references to the description or the drawings.

2. The claims do not comply with Rule 6.2(b) because reference signs in parentheses relating the technical features mentioned to the drawings should be inserted in the claims to increase their intelligibility. This applies to both the preamble and the characterising portions.

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of V

Claims 19-33 meet the criteria set forth in PCT Article 33(2)-(4) for novelty. The prior art published before the priority date does not disclose a building system including a building panel and a reinforcing element wherein the panel has edge regions profiled to form interfitting connecting regions and reinforcing element is concealed between the interfitting connecting elements.

Inventive Step (IS) Claims 1-33

The claimed invention as in claims 1-12 and 14-33 is not obvious in the light of any of the cited documents nor disclosed in any obvious combination, nor would the claimed invention be obvious to a person skilled in the art in the light of common general knowledge by itself or in combination with any of these documents.

However, claim 13 is not inventive for the reasons given earlier under Novelty section in this report.

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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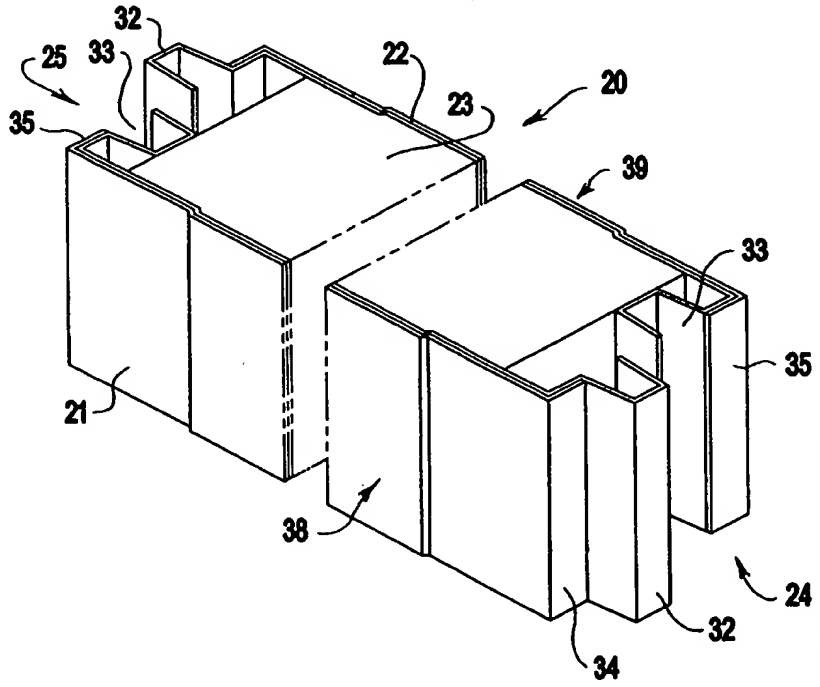
Published
With international search report.

(54) Title: A PAPER COATED METAL BUILDING PANEL AND COMPOSITE PANELS USING SAME

(57) Abstract

A building panel (20) is disclosed which is of sandwich construction having metal sheet structures (21, 22) interconnected by a core (23). The panel (20) includes profiled edge regions (24, 25) enabling the panel to interlock with a like panel. In one form a paper covering (27) is bonded to the metal sheet structure so that panel has a surface characteristic similar to that of plasterboard. A reinforcing element (40) is also disclosed which is arranged to be connected at the join between abutting panels to improve the load bearing capability of the panel (20).



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A PAPER COATED METAL BUILDING PANEL AND COMPOSITE PANELS USING SAME

The present invention relates to a building panel. One aspect of the invention has been developed especially, but not exclusively for use in interior wall or ceiling panelling, and the invention is herein described in that context. However it is to be appreciated that the invention has broader application and is not limited to these uses. In particular, another aspect of the invention is especially suited for use in flooring or the like .

In the building industry, panels are widely used in interior walls, partitions and ceilings. One of the most common type of paneling used is plasterboard, which traditionally is formed from a core of gypsum or anhydrite plaster, faced with two sheets of heavy paper. Plasterboard has gained widespread acceptance because it is inexpensive, relatively light weight, can be easily cut and provides a good surface finish.

However, there are significant problems with plasterboard. Traditional plasterboard panels are not self supporting and need to be fixed to a supporting frame such as a stud wall or the like. This substantially increases the cost of installation. Furthermore, plasterboard has relatively poor thermal and acoustic insulation properties as compared to block walls, and is relatively inflexible thereby making it difficult to form into complex shapes.

Various proposals have been made to address these problems. These include the development of hollow core reinforced plaster panels or prefabricated sandwich panels made from two sheets of plasterboard bonded to a paper honeycomb core. Whilst such designs are self supporting, they have limited applications and have not gained widespread acceptance.

An aim of a first aspect of the present invention is to provide a building panel which is similar to traditional plasterboard panels in both terms of its costs and surface characteristics, yet which is able to provide significant improvements in respect of its structural properties.

According to this aspect of the present invention, there is provided a building panel which includes a metal sheet substrate and a paper covering bonded to the substrate.

The panel according to this aspect of the present invention provides significant advantages over plasterboard panels. The panel of the invention with its paper covering, has a surface characteristic which can match that of plasterboard, yet offers significant improvements in structural properties because of the metal substrate. For example, the panel may be load bearing, may be formed or otherwise shaped into complex configurations, and is able to exhibit improved thermal and acoustic insulation characteristics.

A particular advantage of the panel is that the surface of a wall formed from the panels can be finished to appear continuous using standard techniques used on plasterboard walls. Such techniques include plaster rendering and the use of plaster tape.

Throughout the specification the term "paper" includes sheet material formed from any fibrous material produced from either naturally occurring or synthetic fibres. The sheet material may be of unitary or composite construction. It also includes other types of sheet material which have characteristics, in particular surface texture, which are similar to paper.

In a particularly preferred form, the panel of the invention is formed in continuous lengths using a laminating process to adhere the paper covering to the metal substrate. The production of panels in this way provides significant cost benefit and also has the advantage of enabling panels of indefinite length to be produced.

Preferably the panel includes longitudinal edges which are profiled. These profiles may be incorporated to allow the panel to be interconnected with like panels, or associated componentry such as fixing rails, edge trim or the like. The profiled edges may also be designed to allow the panel to interconnect with a traditional plasterboard panel so that the panel of the invention can easily be used in conjunction with these traditional plasterboard panels. In addition the panel may be profiled to enhance its load bearing characteristics. These strengthening profiles may be included at the longitudinal edges, or could be incorporated mid span in the form of ribs or corrugations or similar structure. The profiles may be formed in the panel using any known technique such as roll forming, folding or the like. However in a

is convenient for use in the passage of cabling or other services. Moreover, the male coupling may be arranged to be drawn into tight engagement with the female coupling so that the overlapping structure of the male and female connection acts in unison thereby increasing the load bearing capability of the panels.

In one form, the composite panel is designed to be able to receive a structural member between its sheet structures. The structural member improves the load bearing capability of the panel and preferably comprises a metal beam.

In a particularly preferred form, the edge profiles are designed to be able to receive the structural member so that the member is contained within the connection between the adjacent panels and is fully concealed. In this way, a wall formed from the panels may be continuous across the join which contains the reinforcing member.

In a further arrangement, the edge profiles are formed separate to the panel and are arranged to be located over, and secured to, the edge margins of the panels which are typically unformed. This arrangement enables use of a composite panel with straight edges. Alternatively, the separate edge profiles may be used as an accessory to the building system incorporating the composite panels with the profiled edges. For example, the edge profiles may be used when it is required to cut the composite panel or when the composite panel is required to interfit with conventional panels or other building members.

In a further aspect, the present invention relates to a building system which has enhanced load bearing capabilities.

According to this aspect, the present invention relates to a building system including a building panel and a reinforcing element, the building panel having spaced sheet structures interconnected by a core, said sheet structures defining opposite major surfaces of said panel and wherein the element is locatable between the planes of said major surfaces so as to form in use, a concealed reinforcing member which is operative to improve the load bearing characteristics of said panel.

CLAIMS:

1. A building panel including a metal sheet substrate and a paper covering bonded to said substrate.

2. A building panel according to claim 1, wherein the paper covering gives the panel a surface characteristic substantially the same as a plasterboard panel.

3. A building panel according to either claims 1 or 2, wherein said paper is bonded to said substrate using a reactive hot melt adhesive.

4. A building panel according to any preceding claim wherein said paper is bonded directly onto said metal substrate.

5. A building panel according to any preceding claim, wherein the panel is formed in continuous lengths using a laminating process to adhere the paper covering to said metal substrate.

6. A building panel according to any preceding claim, wherein the panel includes longitudinal edge regions which are profiled to facilitate interconnection of the panel with a like panel.

7. A building panel according to any preceding claim, wherein the panel is arranged to interconnect with a like panel in abutting relationship along the longitudinal edge regions and wherein a major surface of the panel including the paper covering incorporates a recess adjacent the longitudinal edge region to facilitate concealment of the join between abutting panels.

8. A composite panel including spaced sheet metal structures which are interconnected by a core, and wherein at least one of the sheet structures includes a building panel according to any preceding claim having the paper covering forming an outer surface of said composite panel.

9. A composite panel according to claim 8, wherein the panel includes longitudinal edge regions which are adapted to interconnect to a like panel in abutting relationship, and wherein said composite panel includes connecting elements to facilitate interconnection of said abutting panels.

10. A composite panel according to claim 9, wherein the connecting elements are integrally formed with the panel and are formed by profiling at least one of the edge regions of the metal sheet structures.

11. A composite panel according to claim 9, wherein the connecting elements are connected to the longitudinal edge regions of the panel.

12. A composite panel according to anyone of claims 9 to 11, wherein the connecting elements are in the form of interfitting recesses and projections.

13. A composite panel according to claim 12, wherein each recess is channel shaped and incorporates opposite walls interconnected by a substantially flat base portion, and wherein the or each projection is shaped to interfit with the channel shaped recess of a like panel and includes opposite walls interconnected by a substantially flat apical portion.

14. A composite panel according to either claim 12 or 13 wherein the recesses and projections are arranged to interfit in a snap fit arrangement.

15. A composite panel according to claim 14, when dependent on claim 13, wherein the opposite walls of the or each recess include a re-entrant inner surface, and wherein the opposite walls of the projections include a crest portion on their outer surface, and wherein the crest portions on the projection of one panel is arranged to engage with the re-entrant inner surface of the recess of a like panel to form said snap fit arrangement.

16. A composite panel according to any one of claims 9 to 15, wherein the panel includes opposite major surfaces and wherein the connecting elements are disposed inwardly of at least one major surface so as to form at least one abutment surface along each longitudinal edge region, said abutment surface being disposed between said one major surface and the connecting element located at that edge region.

17. A composite panel according to any one of claims 9 to 16, wherein a reinforcing member is operable to be received between said sheet structures to improve the load bearing capacity of said panel.

18. A composite panel according to claim 17, wherein the reinforcing member is operative to be contained within the connection of the panel to a like panel.

19. A building system including a building panel and reinforcing element, the building panel having spaced sheet structures interconnected by a core, said sheet structures defining opposite major surfaces of said panel and wherein the

element is locatable between the planes of said major surfaces so as to form in use, a concealed reinforcing member which is operative to improve the load bearing characteristics of said panel.

20. A building system according to claim 19, wherein said sheet structures are formed of metal.

21. A building system according to either claim 19 or 20, wherein the panel includes longitudinal edge regions which are adapted to interconnect to a like panel in abutting relationships, and wherein said panel includes connecting elements to facilitate interconnection of said abutting panels.

22. A building system according to claim 21, wherein the connecting elements are integrally formed with the panel and are formed by profiling at least one of the edge regions of said sheet structures.

23. A building system according to claim 21, wherein the connecting elements are connected to the longitudinal edge regions of the panel.

24. A building system according to any one of claim 21 to 23, wherein the reinforcing member is locatable within the join formed at the abutment of the panel with a like panel.

25. A building system according to any one of claims 21 to 24, wherein the connecting elements are in the form of interfitting recesses and projections, and wherein the reinforcing element incorporates opposite major surfaces, with one of said major surfaces incorporating at least one projection which is operative to locate within the recess of a connecting element of the panel, and said other major surface incorporating at least one recess which is operative to receive the projection of the connecting element of a like panel so that said reinforcing element is able to interfit with the recesses and projections of the connecting elements.

26. A building system according to claim 25, wherein the reinforcing element is operative to engage with the connecting elements of the panel in a snap fit arrangement.

27. A building panel substantially as herein described with reference to the accompanying drawings.

28. A composite panel substantially as herein described with reference to the accompanying drawings.

29. A building system substantially as herein described with reference to the accompanying drawings.